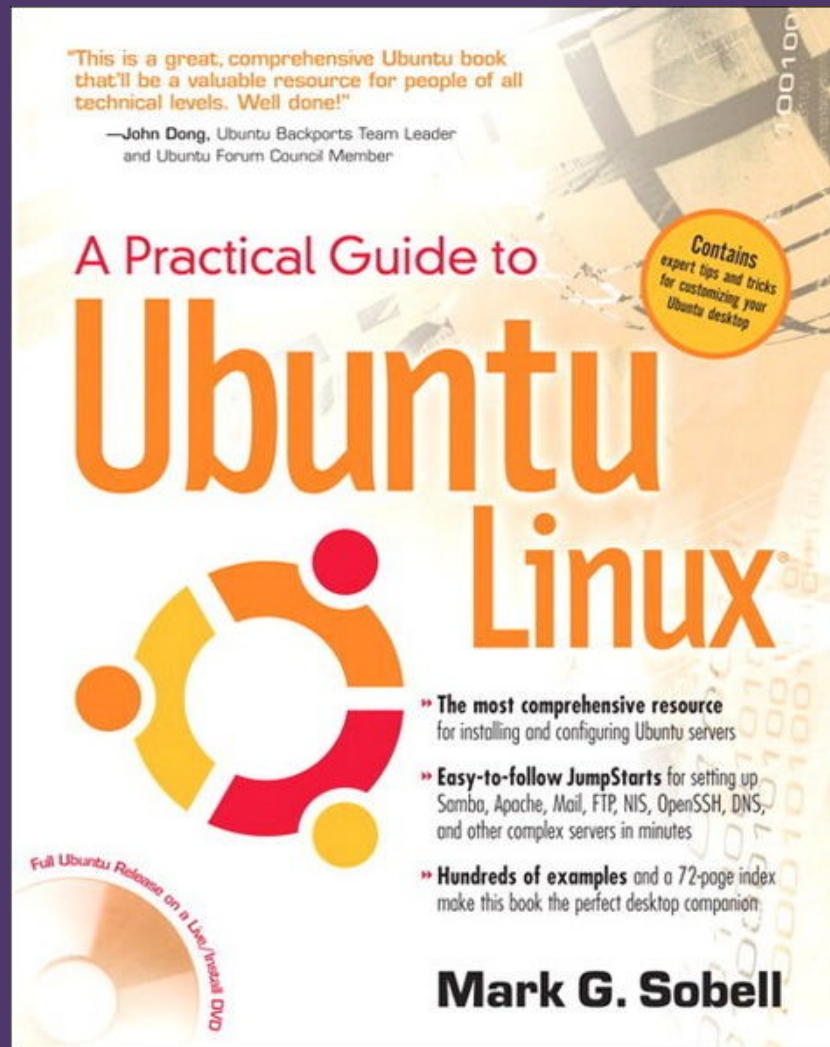




Linux
CPT-201

<http://cpt201.hubner.org/>

The Book ...



Homework Review

Answers to these questions are in the assigned reading

1. What is **Linux**?
2. What is **Slackware**?
3. What is **CentOS** ?
4. What is the **GNU**?
5. What is the **FSF**?
6. What is the **GPL**?
7. What is the **OSI**?
8. What is the major difference between **GPL** and the **BSD License**?
9. Who is **Richard Stallman**?
10. Who is **Linus Torvalds**?

Taking a Screenshot in Gnome

- Whole Screen

Press **PrintScreen**

- Current Window

Press **ALT+PrintScreen**



Take a Screenshot

- Whole Screen

Press **PrintScreen**

- Current Window

Press **ALT+PrintScreen**

- Send Devo the Screenshots

devon@hubner.org



The Linux Filesystem


- In Linux, a mounted drive is called a filesystem.
- On Windows, C: is the primary drive, on Linux that would be called the C: Filesystem.
- Windows uses backslashes to separate directory names (\)
- Linux uses forward slashes (/)
- Where Windows has many different drive letters, each for a different drive or partition
- Linux has a single unified directory, no drive letters.
- Partitions, called filesystems, are mounted within the directory paths.

Linux systems contain these common directories

- / The root Filesystem
- /home User Directories
- /etc Configuration Files
- /boot The boot loader & Kernel
- /usr Userland tools
- /var Variable data
- /lib System Libraries

Edit the YUM Repository files


- Login as root



centos6

Other...

Username:

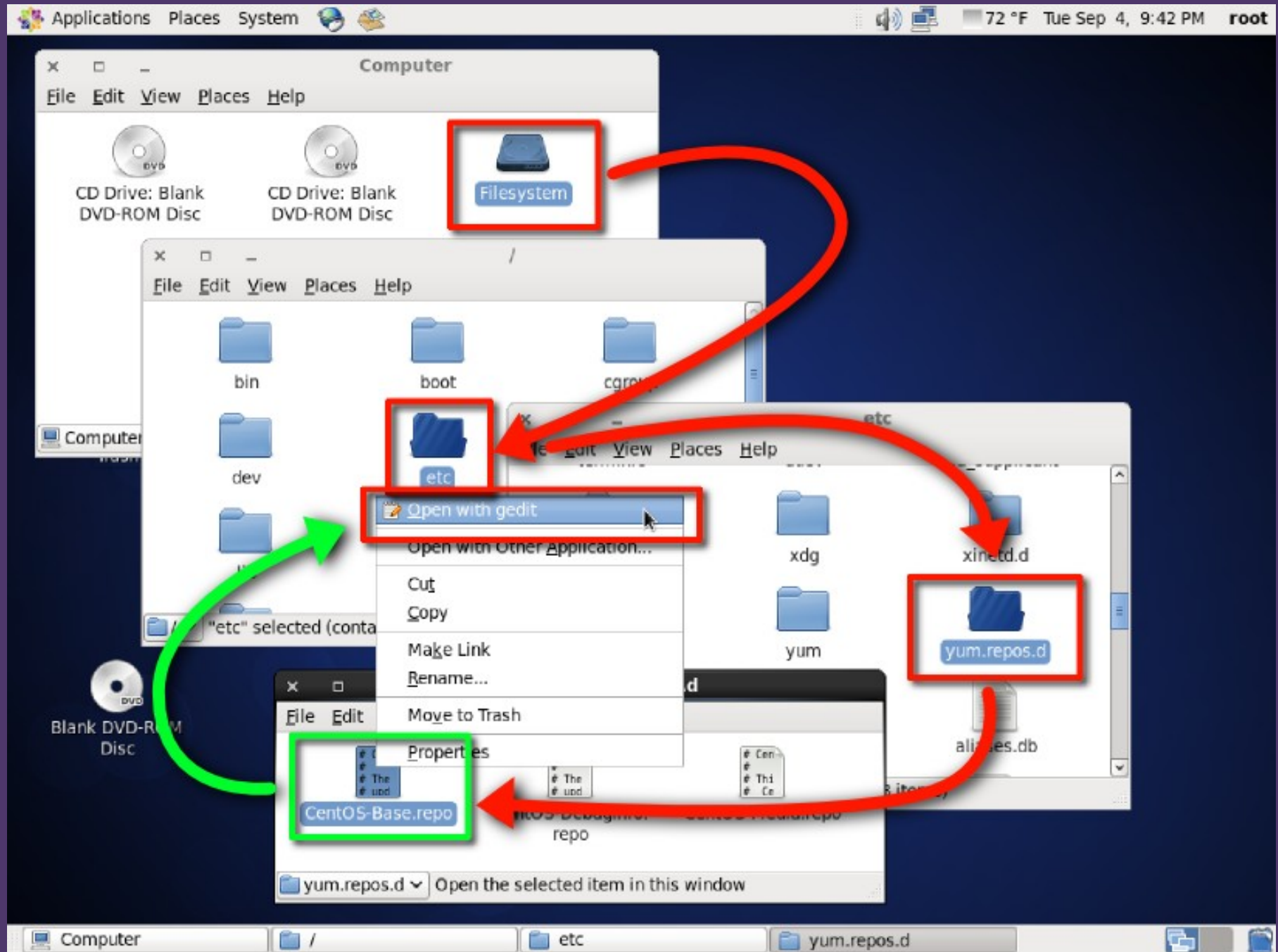


centos6

Other...

Password:

Edit the YUM Repository files



Edit the YUM Repository files

- Comment out the Mirrorlist with a # sign

```
[base]
name=CentOS-$releasever - Base
#mirrorlist=http://mirrorlist.centos.org/?release=
#baseurl=http://mirror.centos.org/centos/$releasever/os/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
enabled=0
```

Edit the YUM Repository files

- Change the GPG Check to 0

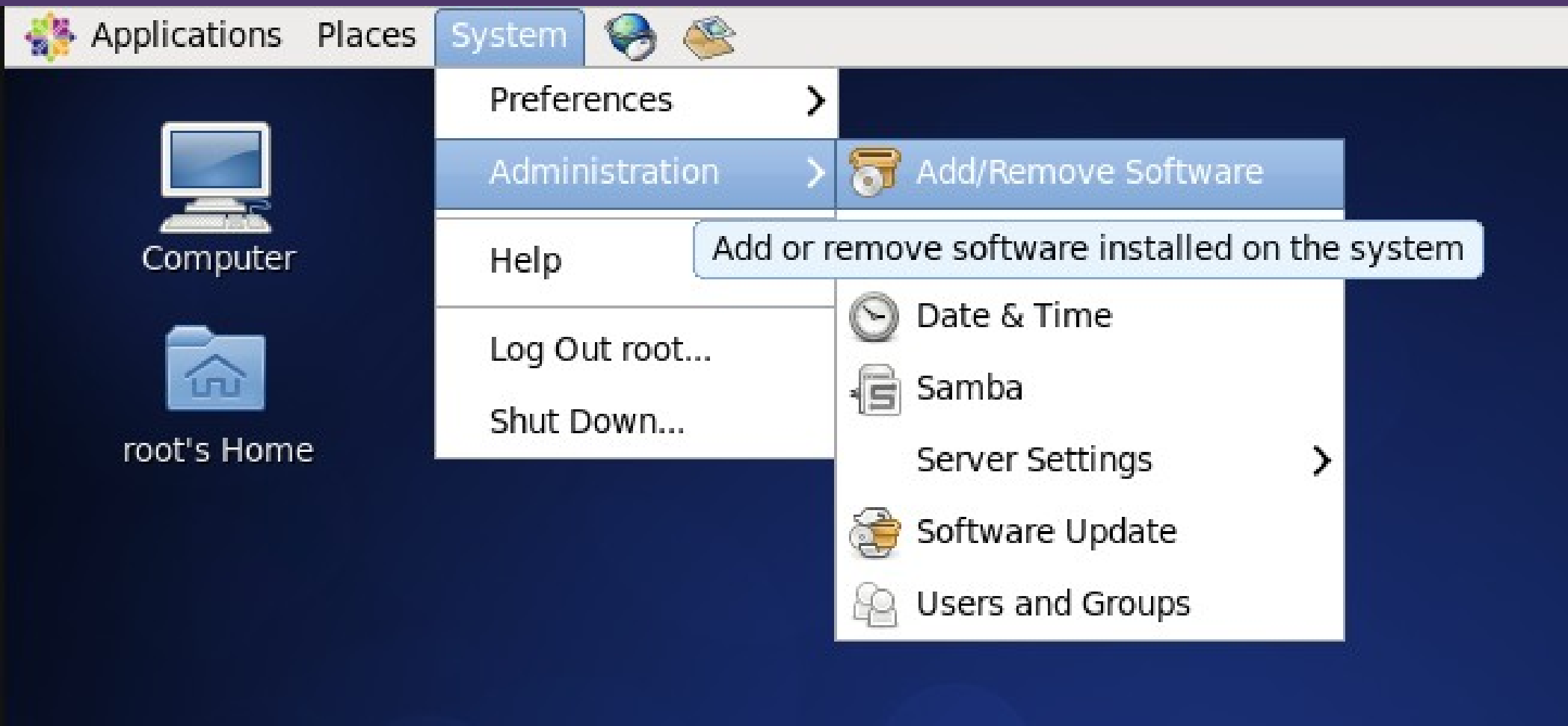
```
[base]
name=CentOS-$releasever - Base
#mirrorlist=http://mirrorlist.centos.org/?
release=$releasever&arch=$basearch&repo=os
#baseurl=http://mirror.centos.org/centos/$releasever/os/$basearch/
gpgcheck=0
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
enabled=0
```

Edit the YUM Repository files

- Set the Base URL to the in-class server

```
[base]
name=CentOS-$releasever - Base
#mirrorlist=http://mirrorlist.centos.org/?
release=$releasever&arch=$basearch&repo=os
baseurl=http://192.168.7.7/repos/centos/$releasever/os/
$basearch/
gpgcheck=0
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
enabled=0
```

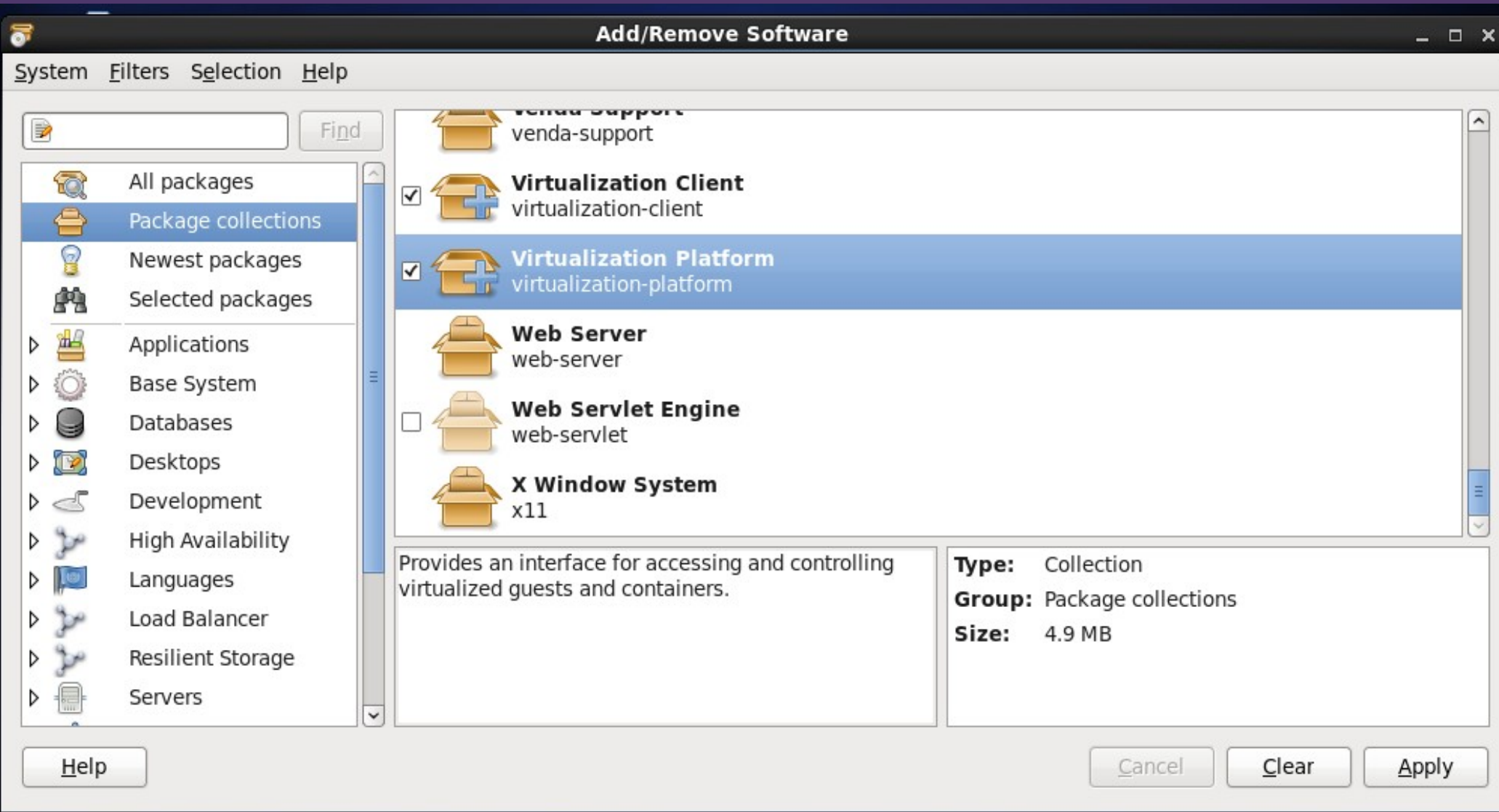
Add / Remove Software

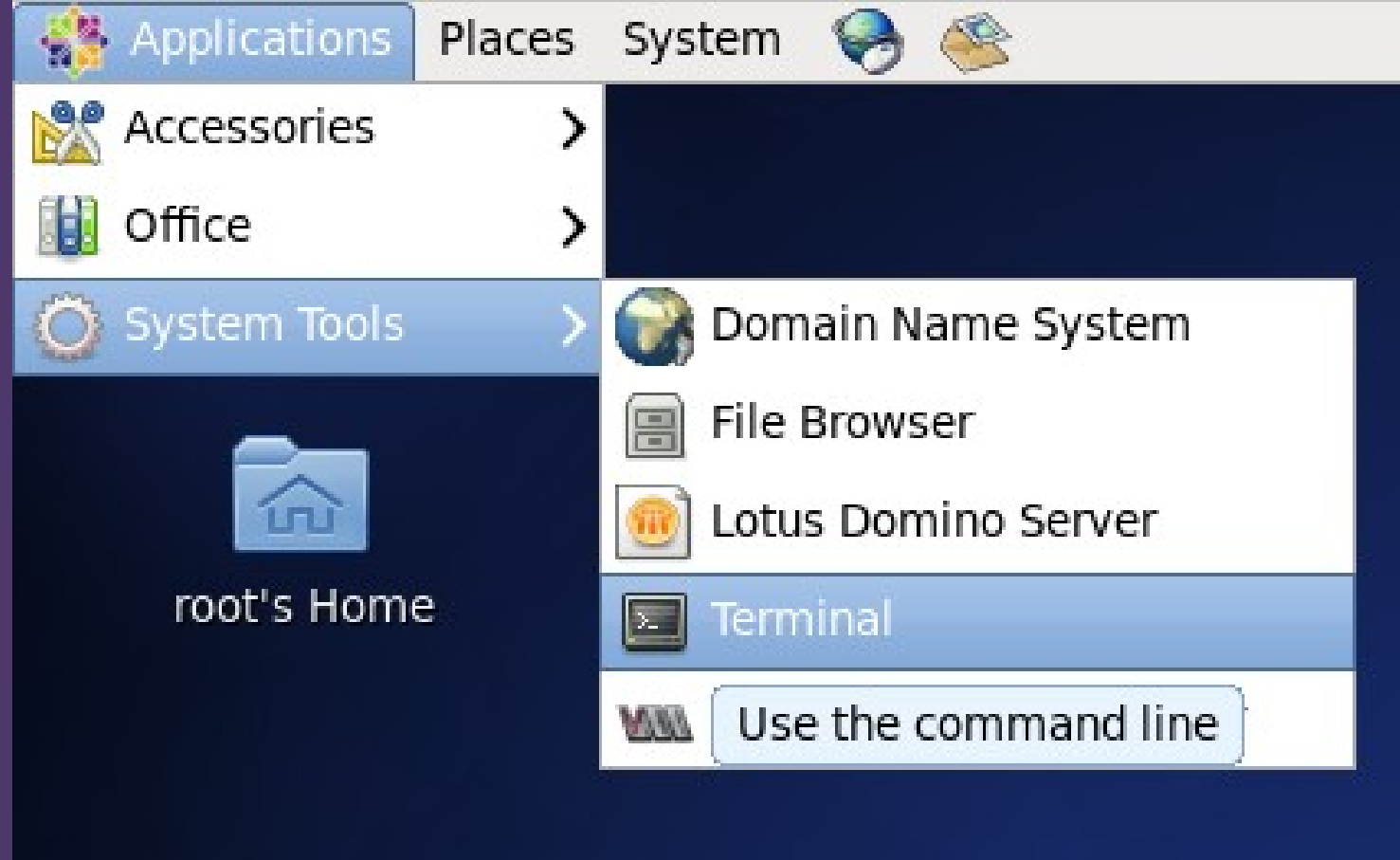


Runing as root Warning



Add the Virtualization Package Collections



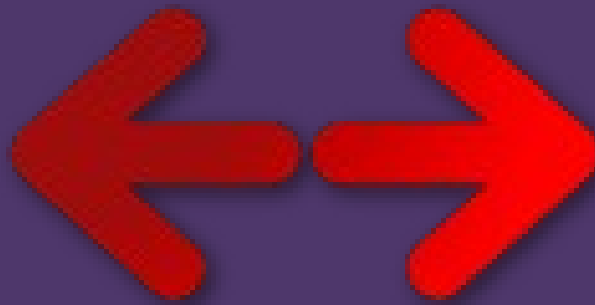


yum groupinstall "Virtualization Tools"

yum groupinstall "Virtualization Platform"

yum install virt-manager

Disk Images



Downloading Disk Images



SystemRescueCd

[Homepage](#) | [Manual](#) | [Forums](#)

Cheap Linux DVD / USB

[SystemRescueCd](#)
[Ubuntu 12.04 LTS](#)
[Fedora 17](#)
[CentOS 6.3](#)
[Debian 6.0.5](#)
[OpenSUSE 12.1](#)
[Linux Mint 13](#)
[Knoppix 7.0.4](#)

Site map

[Home](#)
[download](#)
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[Package-list](#)
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[Manual in Spanish](#)
[Manual in Italian](#)

[Quick Start](#)

[Documentation](#)

[Disk partitioning](#)

[LVM Guide](#)

DOWNLOAD

[History](#)

Getting SystemRescueCd

You can download SystemRescueCd immediately from this page. If you cannot download it you can order a bootable [CDRom or USB-stick](#) with the latest SystemRescueCd already on it from the popular [osdisc website](#).

Download final stable version for i586/amd64 (default choice)

Stable x86:	SystemRescueCd-x86-3.0.0 (347 MiB)
Release date:	2012-09-03
Download	Sourceforge download
Changelog	Changelog for x86
md5sum	6bb6241af752b1d6dab6ae9e6e3e770e
sha1sum	490ca746342072174ae8646bfd81f7a5769cc1cd
sha256sum	2954125d1a49c15a57b91023b9f71f015d64c6736ee7699aa45857d48469e644

You may also want to download [old versions \(download links and md5sum\)](#)

Installation on an USB stick

If you are interested in [installing SystemRescueCd on an USB stick](#), you must download the CD-ROM version (ISO image) first from the current page.

Testing the downloaded file

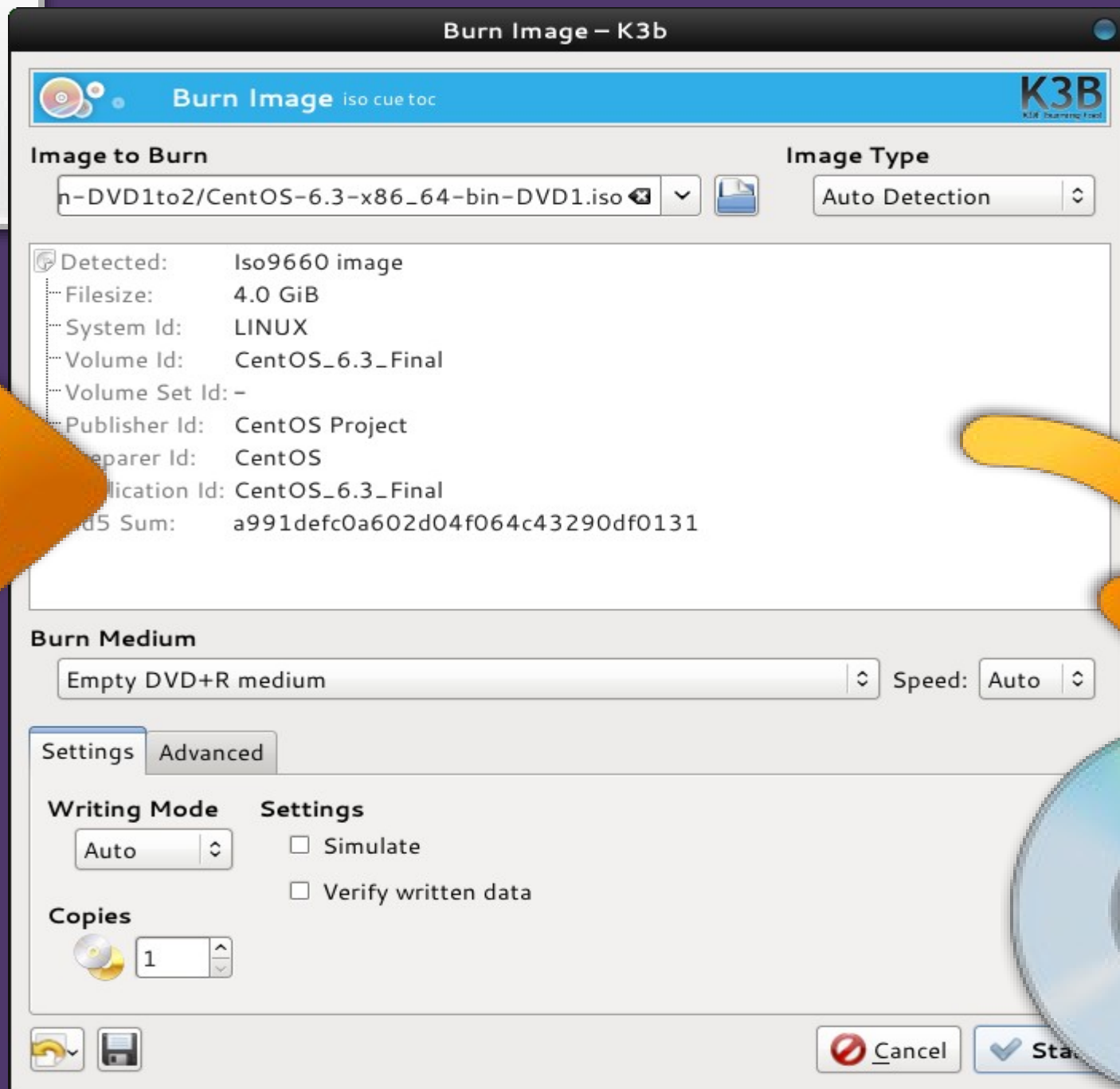
To confirm that the download was successful, you should check the **MD5 checksum** of the file. Type `md5sum path/to/file`. md5sum is available at [md5deep](#). This is an improved version. Here are [the binary for Win32](#), and [the sources for Linux](#).

Downloading Disk Images

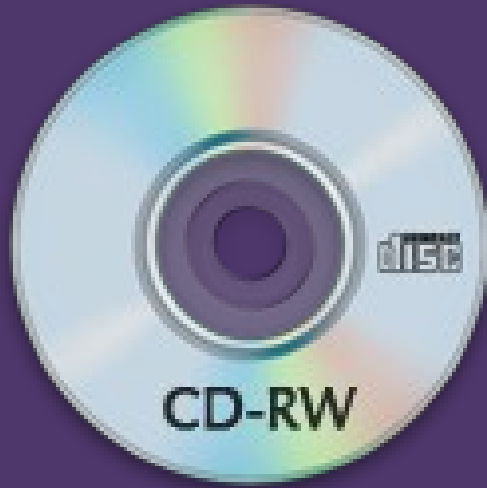
- You are effectively downloading a Master Image that can be burnt raw to CD/DVD Media.
- <https://sourceforge.net/projects/systemrescuecd/files/sysresccd-x86/3.0.0/systemrescuecd-x86-3.0.0.iso/download>

ISO

Burn Disk Images



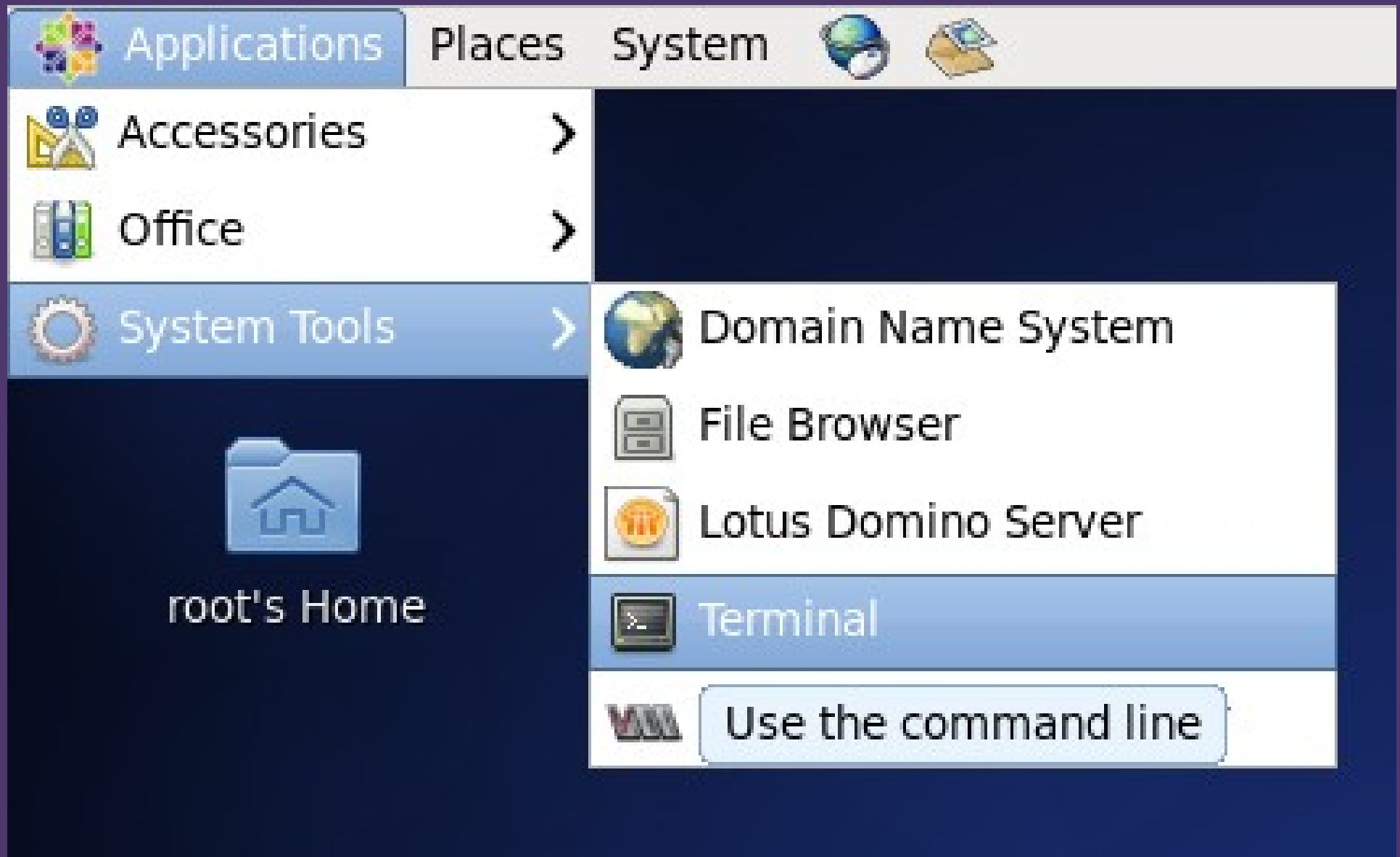
Create an ISO of The System Rescue CD



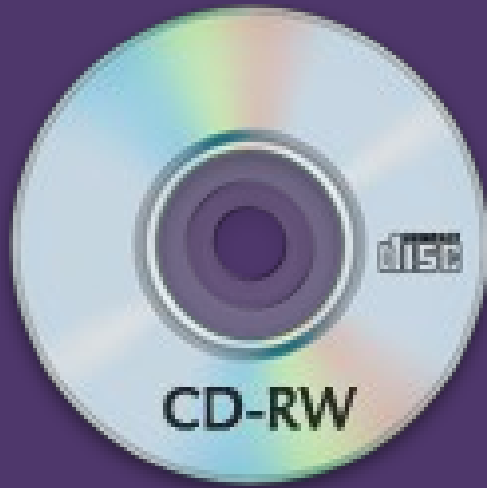
```
dd if=/dev/sr0 of=SystemRescueCD-2.4.1.iso
```



Launch Terminal



Create an ISO of The System Rescue CD



```
dd if=/dev/sr0 of=SystemRescueCD-2.4.1.iso
```



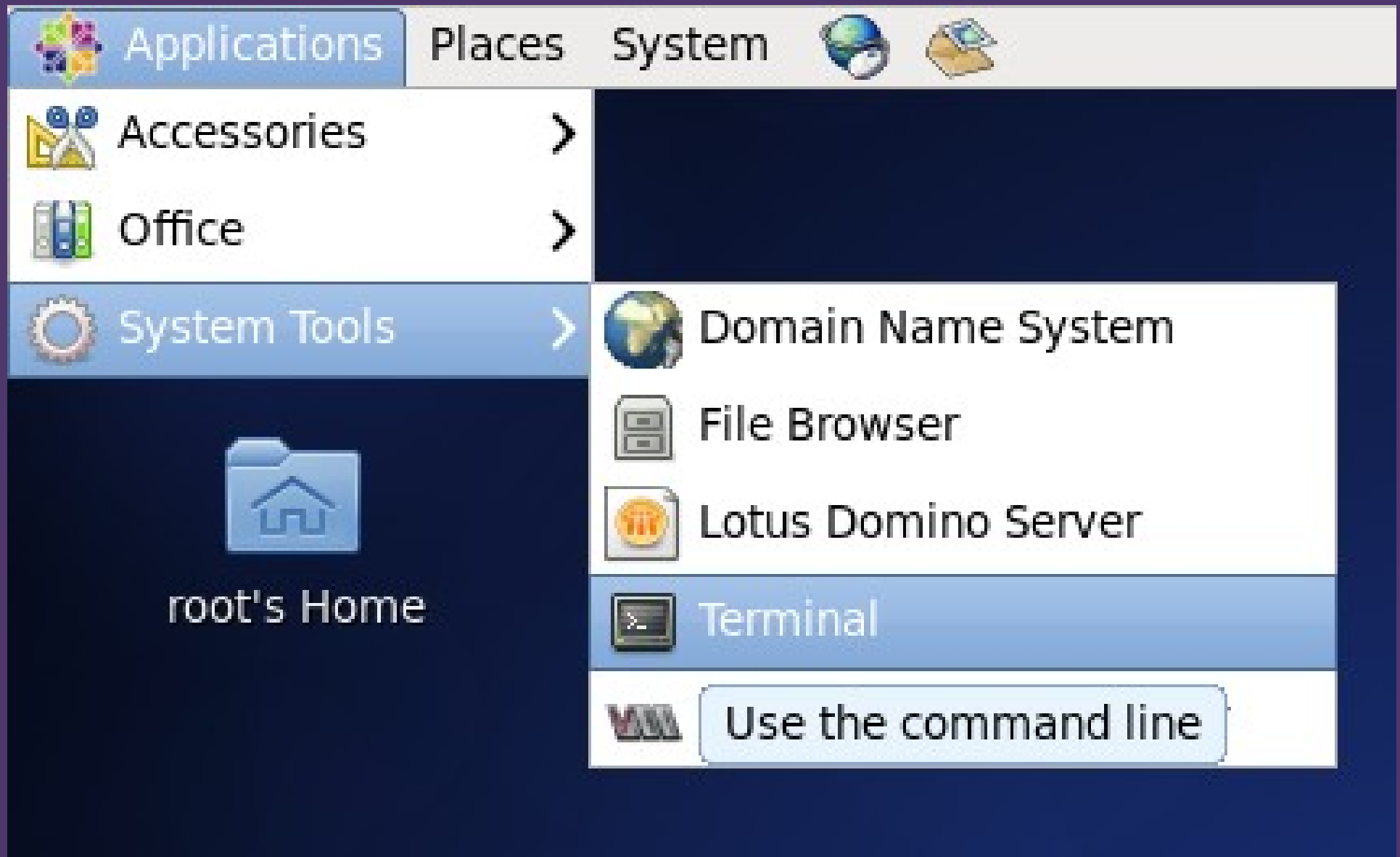
The Linux Shell

- The Command Line Interface (CLI) is where the serious work is done.

Some Basic Commands

- `ls`: Director Listing
- `ls -al`: Extended Directory Listing
- `which`: what provides the command I'm using
- `cd`: Change Directory
- `pwd`: Print Current Working Directory
- `mv`: Move a File, also used to rename a file.
- `rm`: Remove a file (aka delete).
- `nano`: Edit a file
- `grep`: Find something inside a file
- `grep -i`: Case insensitive search
- `cat`: dump the contents of a file, in a read-only fashion, to the screen.

Launch Terminal



ls

which ls

/bin/ls

ls -al

ls /

ls /home

ls /etc

pwd

nano hello.txt

Hello, my name is <your name>

CTL+O to write the file

CTL+X to exit

cat hello.txt

grep -i "hello" hello.txt

cp hello.txt goodbye.txt

nano goodbye.txt

Goodbye, <your name>

CTL+O to write the file

CTL+X to exit

```
cat *.txt  
cp goodbye.txt trash.txt  
cat goodbye.txt  
cat trash.txt  
rm trash.txt  
pwd  
cd /etc/yum.repos.d  
pwd  
cat *.repo
```

- Send Devo the Answer: devon@hubner.org

What happens when you give these two commands if the file does not exist ?

```
cp to_do done  
mv to_do done
```

What is the difference between these two commands ?

```
echo cat  
cat echo
```

Virtualization!





Applications

Places

System



Accessories



Office



System Tools



root's Home



Domain Name System



File Browser



Lotus Domino Server



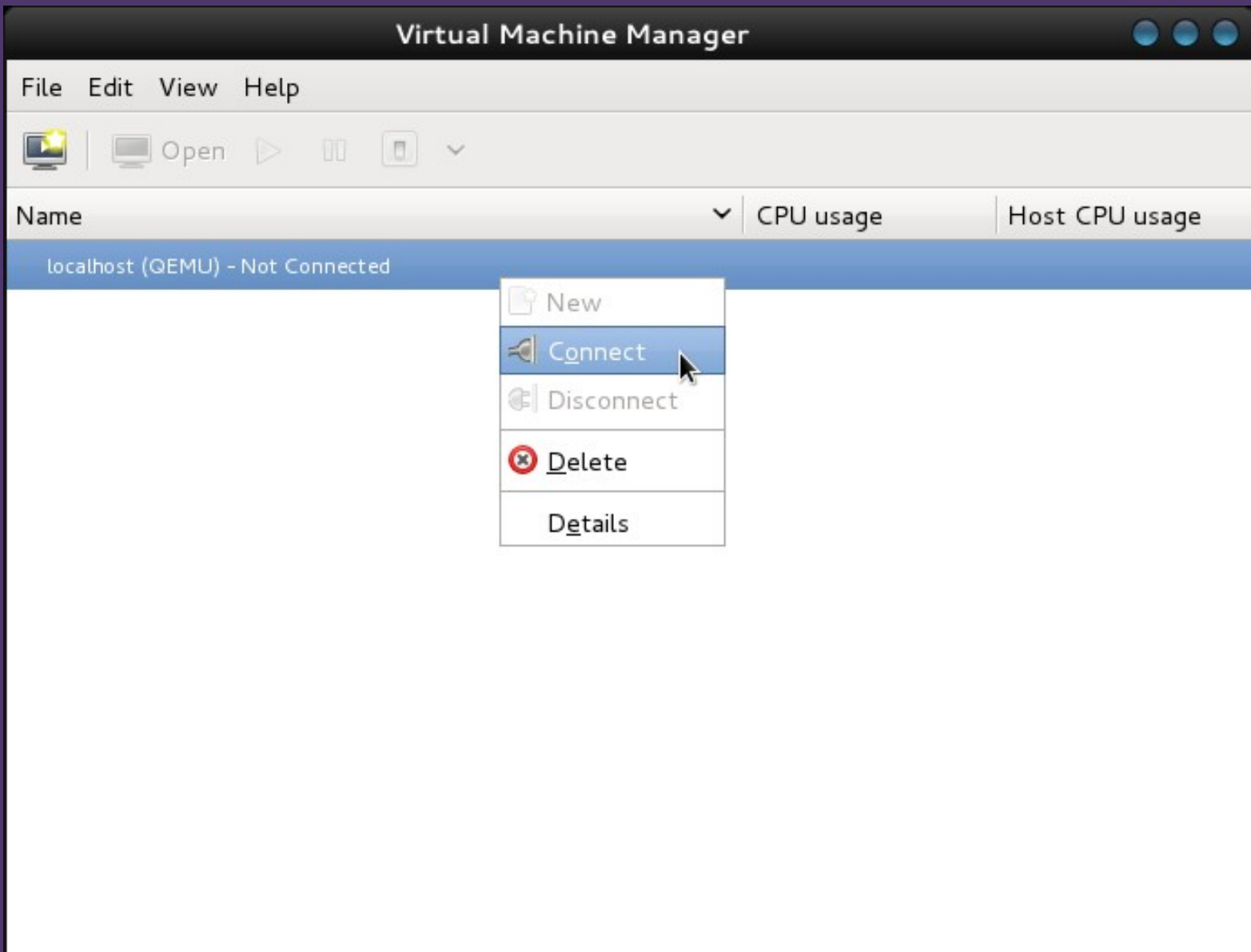
Terminal



Virtual Machine Manager



Manage virtual machines



Virtual Machine Manager

File Edit View Help



Open



Name



CPU



localhost (QEMU)

New VM



Create a new virtual machine

Step 1 of 5

Enter your virtual machine details

Name:

Connection: localhost (QEMU/KVM)

Choose how you would like to install the operating system

- ☒ Local install media (ISO image or CDROM)
- ☐ Network Install (HTTP, FTP, or NFS)
- ☐ Network Boot (PXE)
- ☐ Import existing disk image



Cancel



Back



Forward

New VM



Create a new virtual machine

Step 2 of 5

Locate your install media

☐ Use CDROM or DVD

Media Unknown (/dev/sr0) | ⬆ ⬇ ⬆

☒ Use ISO image:

wnloads/iso/system_rescue_cd_2.4.1.iso



Browse...

Choose an operating system type and version

OS type:

Linux



Version:

Generic 2.6.x kernel



Cancel



Back



Forward

New VM



Create a new virtual machine

Step 3 of 5

Choose Memory and CPU settings

Memory (RAM):  MB

Up to 7783 MB available on the host

CPUs: 

Up to 4 available



Cancel



Back



Forward

New VM



Create a new virtual machine

Step 4 of 5

☒ Enable storage for this virtual machine

☒ Create a disk image on the computer's hard drive

GB

33.5 Gb available in the default location

☐ Allocate entire disk now 

☐ Select managed or other existing storage



Cancel



Back



Forward

New VM



Create a new virtual machine

Step 5 of 5

Ready to begin installation of **my-test-vm**

OS: Generic 2.6.x kernel

Install: Local CDROM/ISO

Memory: 512 MB

CPUs: 1

Storage: 8.0 Gb /var/lib/libvirt/images/my-test-vm.img

☐ Customize configuration before install

▼ Advanced options

Virtual network 'default' : NAT



☒ Set a fixed MAC address

52:54:00:1c:bc:66

Virt Type: kvm



Architecture: x86_64



Cancel



Back



Finish

**SYSTEM-RESCUE-CD 2.4.1 (www.sysresccd.org)**

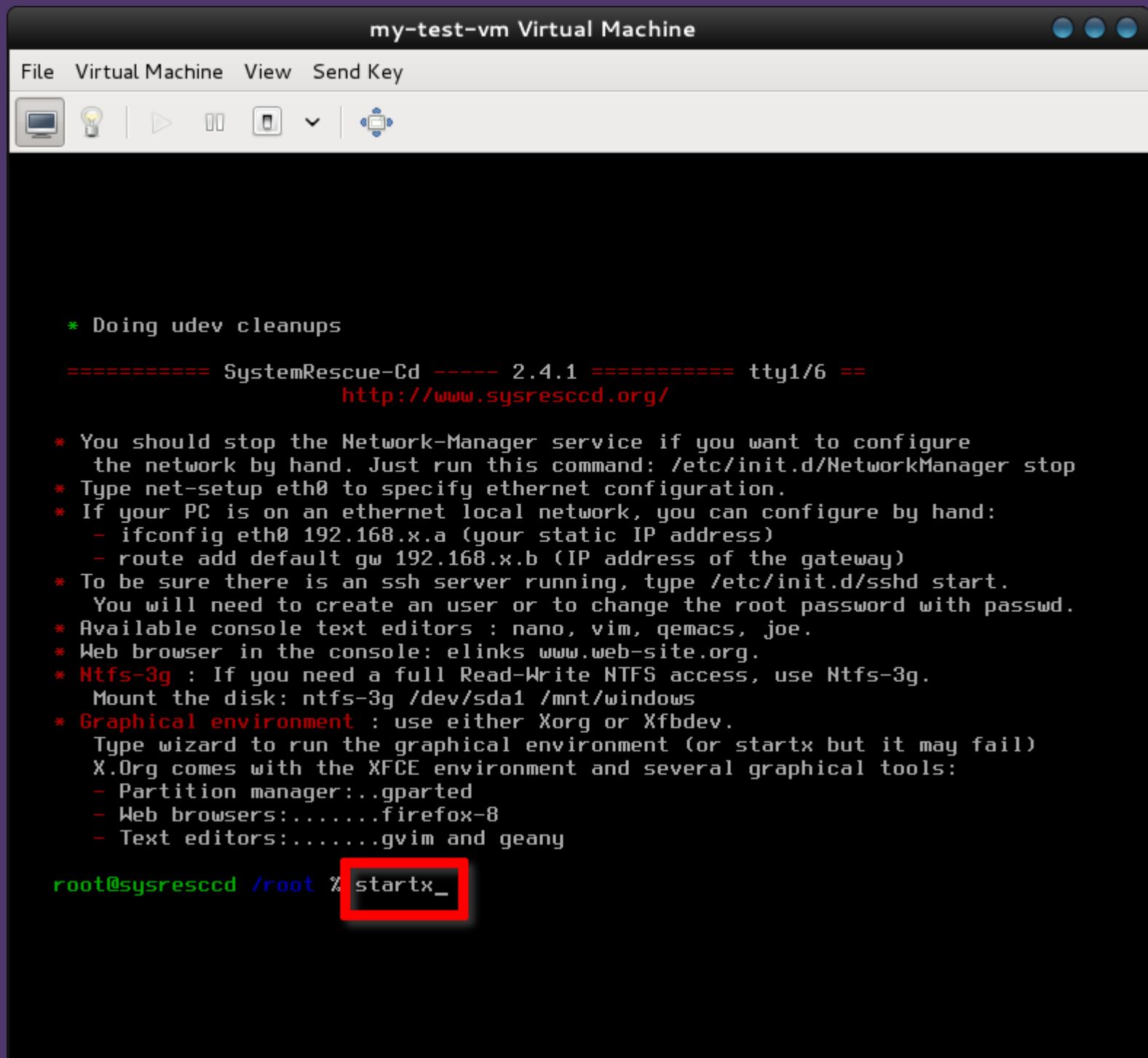
- 1) SystemRescueCd: default boot options
- 2) SystemRescueCd: all files cached to memory (docache)
- 3) SystemRescueCd: framebuffer console in high resolution
- 4) SystemRescueCd: do not ask for keyboard, use US keymap
- 5) SystemRescueCd: directly start the graphical environment
- 6) SystemRescueCd: 64bit kernel with default options

- A) Standard 32bit kernel (rescuecd) with more choice... >
- B) Standard 64bit kernel (rescue64) with more choice... >
- C) Alternative 32bit kernel (altker32) with more choice... >
- D) Alternative 64bit kernel (altker64) with more choice... >
- E) Boot an existing Linux OS installed on the disk... >
- F) Run system tools from floppy disk image... >

- *) Boot from first hard disk
- *) Boot from second hard disk

Press <TAB> to edit options or <F2>, <F3>, <F4>, <F5>, <F6>, <F7> for help

Boot standard 32bit kernel with default options (should always work)
You should use this entry if you don't know which one to use

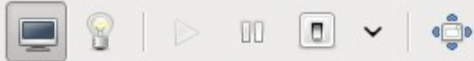


* Doing udev cleanups

=====
SystemRescueCd ----- 2.4.1 ===== tty1/6 ==
<http://www.sysresccd.org/>

- * You should stop the Network-Manager service if you want to configure the network by hand. Just run this command: `/etc/init.d/NetworkManager stop`
- * Type `net-setup eth0` to specify ethernet configuration.
- * If your PC is on an ethernet local network, you can configure by hand:
 - `ifconfig eth0 192.168.x.a` (your static IP address)
 - `route add default gw 192.168.x.b` (IP address of the gateway)
- * To be sure there is an ssh server running, type `/etc/init.d/sshd start`. You will need to create a user or to change the root password with `passwd`.
- * Available console text editors : `nano`, `vim`, `qemacs`, `joe`.
- * Web browser in the console: `elinks www.web-site.org`.
- * **Ntfs-3g** : If you need a full Read-Write NTFS access, use `Ntfs-3g`. Mount the disk: `ntfs-3g /dev/sda1 /mnt/windows`
- * **Graphical environment** : use either `Xorg` or `Xfbdev`. Type `wizard` to run the graphical environment (or `startx` but it may fail) `X.Org` comes with the `XFCE` environment and several graphical tools:
 - Partition manager: `..gparted`
 - Web browsers: `.....firefox-8`
 - Text editors: `.....gvim` and `geany`

root@sysresccd /root % **startx_**



```
root@sysresccd /root %
```



GParted

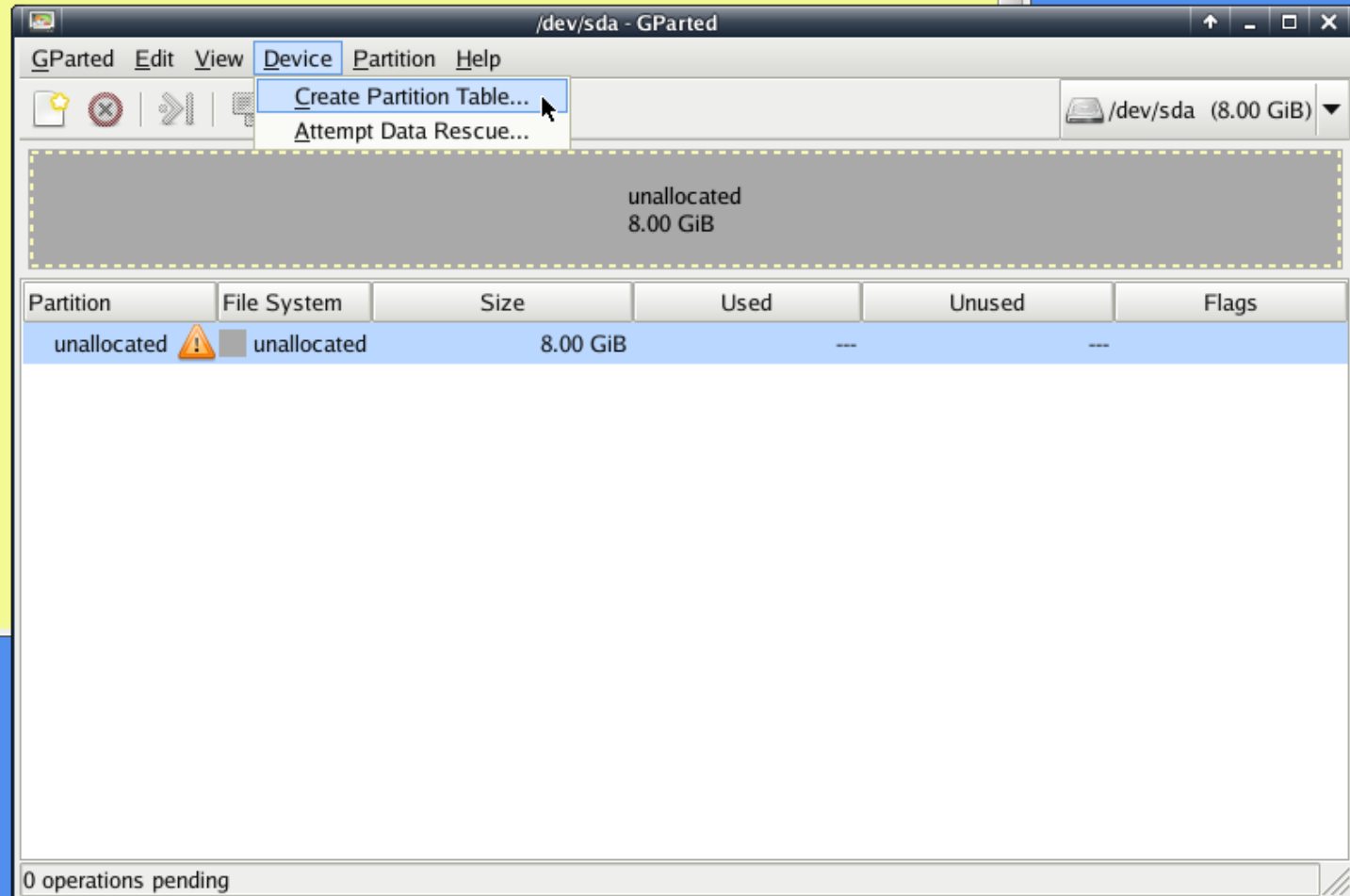
disk partitioning

Terminal

2012-09-05
14:40

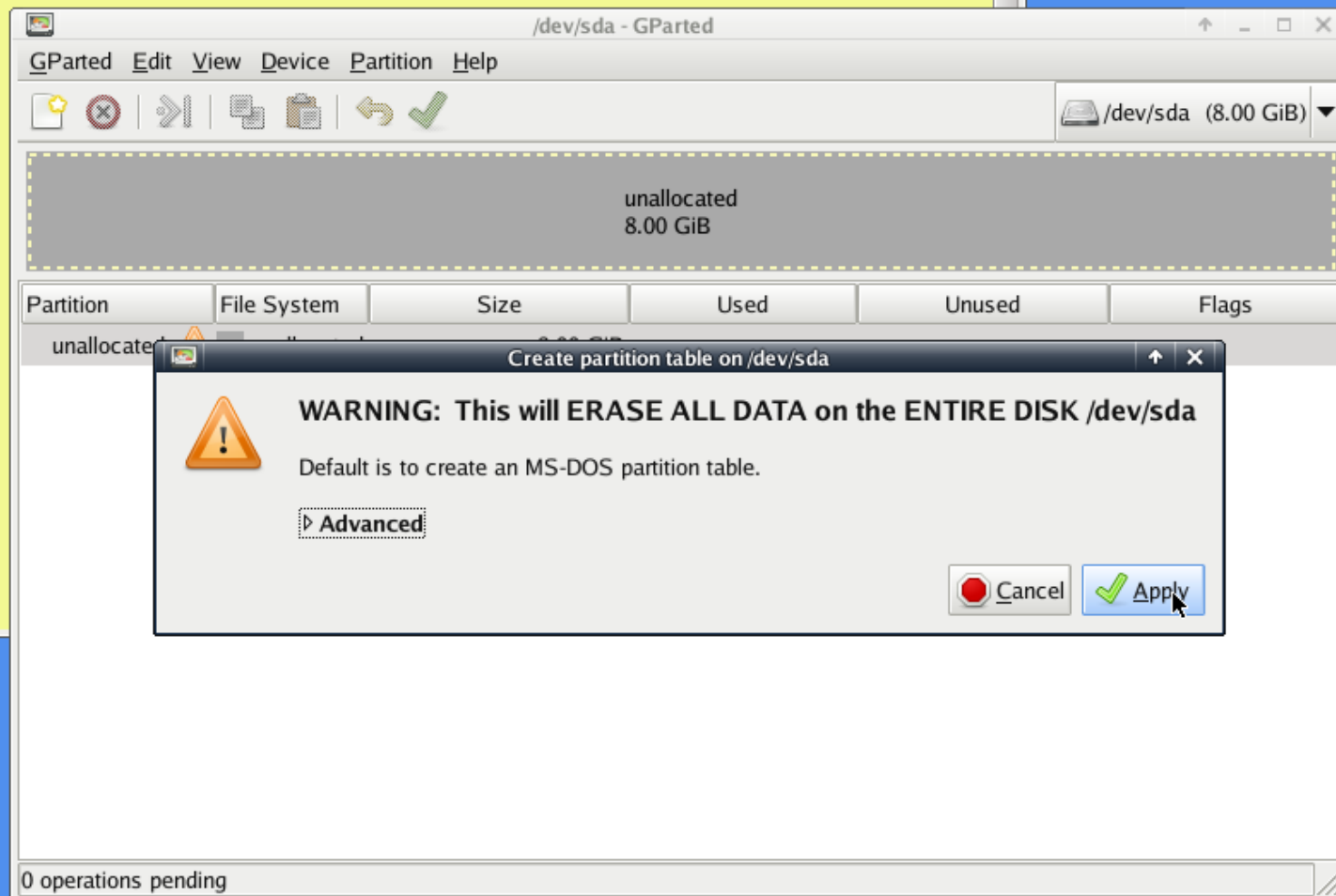


```
root@sysresccd /root %
```





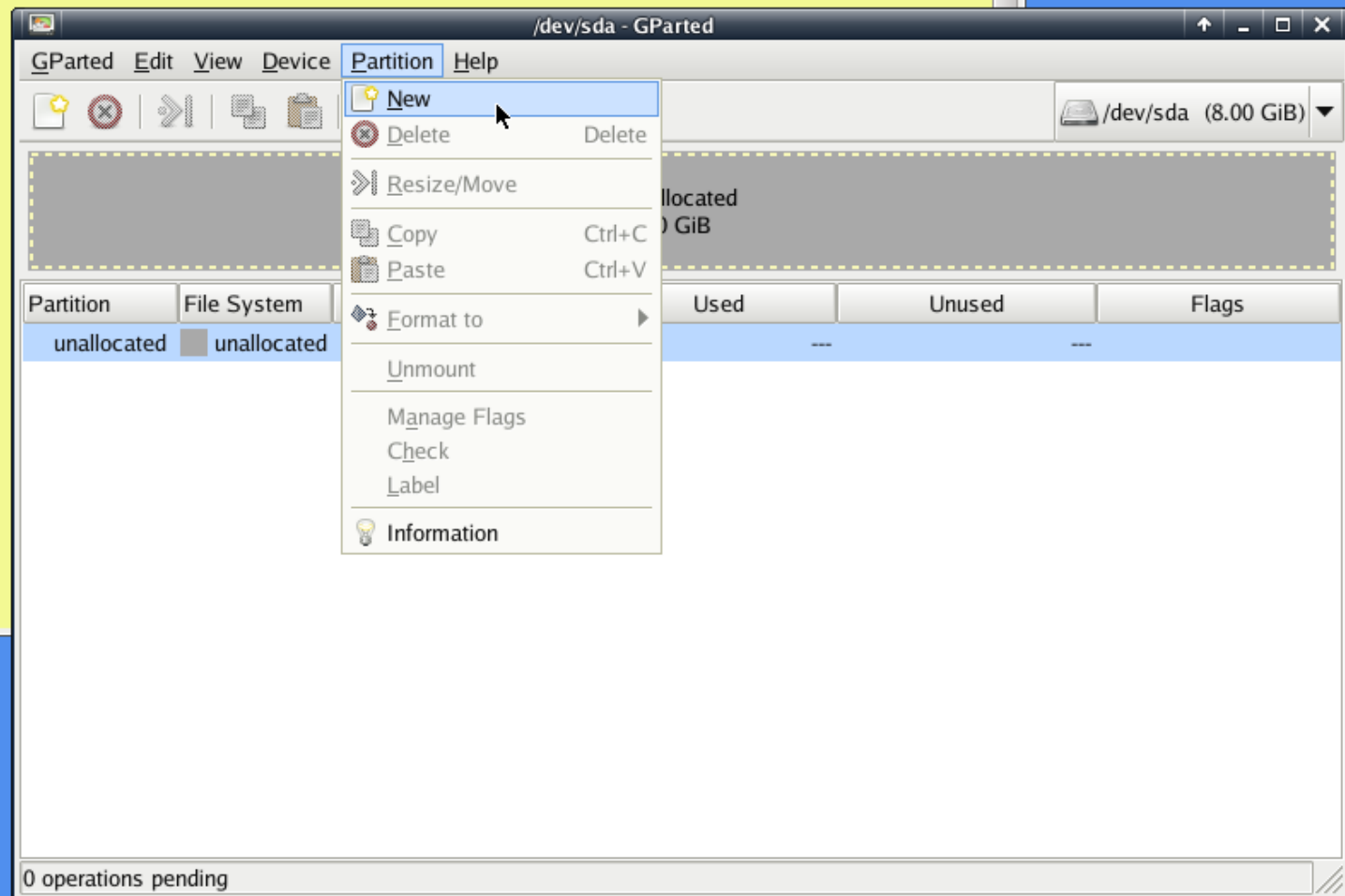
```
root@sysresccd /root %
```



0 operations pending

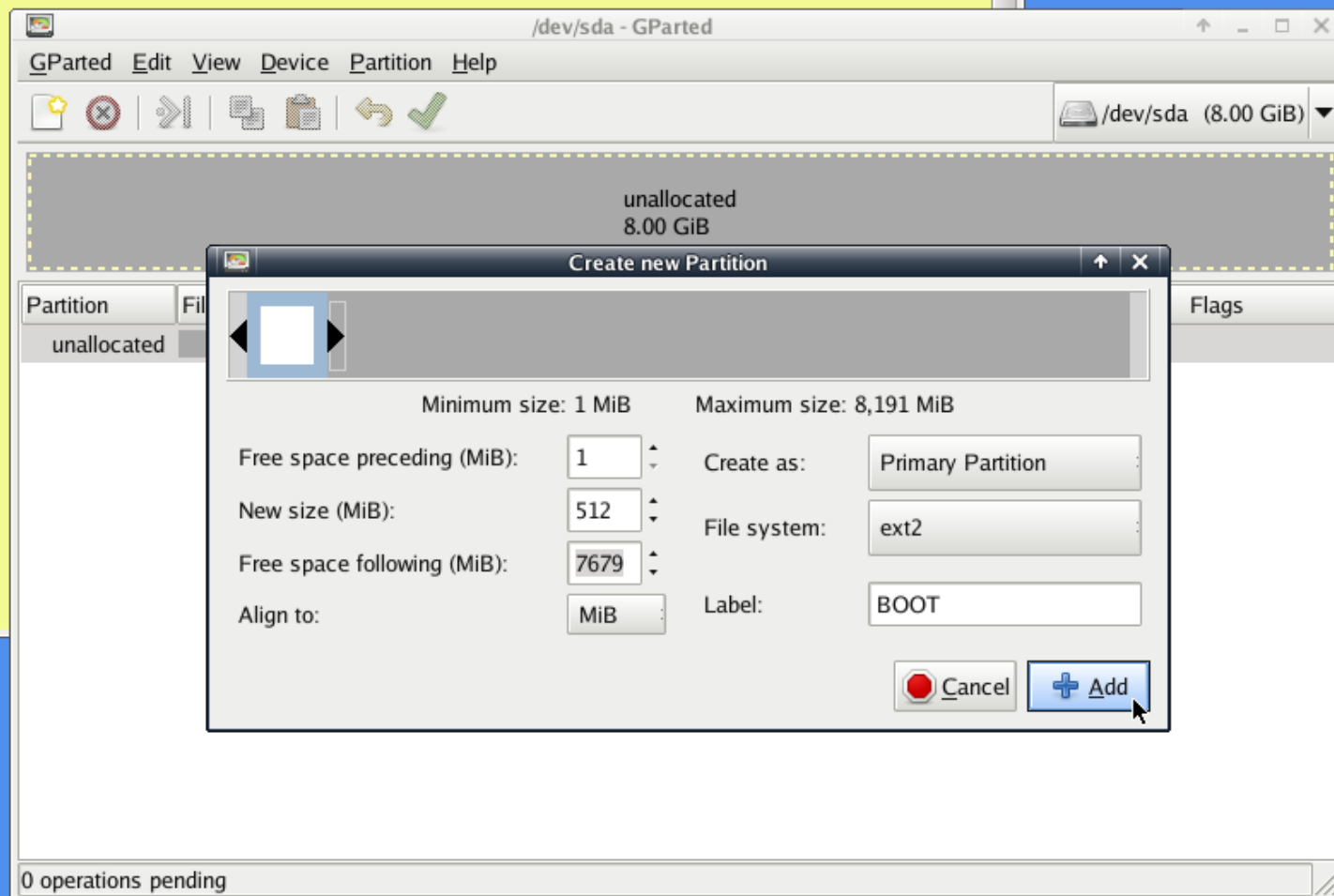


```
root@sysresccd /root %
```





```
root@sysresccd /root %
```





```
root@sysresccd /root %
```

/dev/sda - GParted

GParted Edit View Device Partition Help

New Delete Delete

Resize/Move

Copy Ctrl+C

Paste Ctrl+V

Format to

Unmount

Manage Flags

Check

Label

Information

Partition File System

Partition	File System
New Partition #1	ext2
unallocated	unallocated

unallocated 7.50 GiB

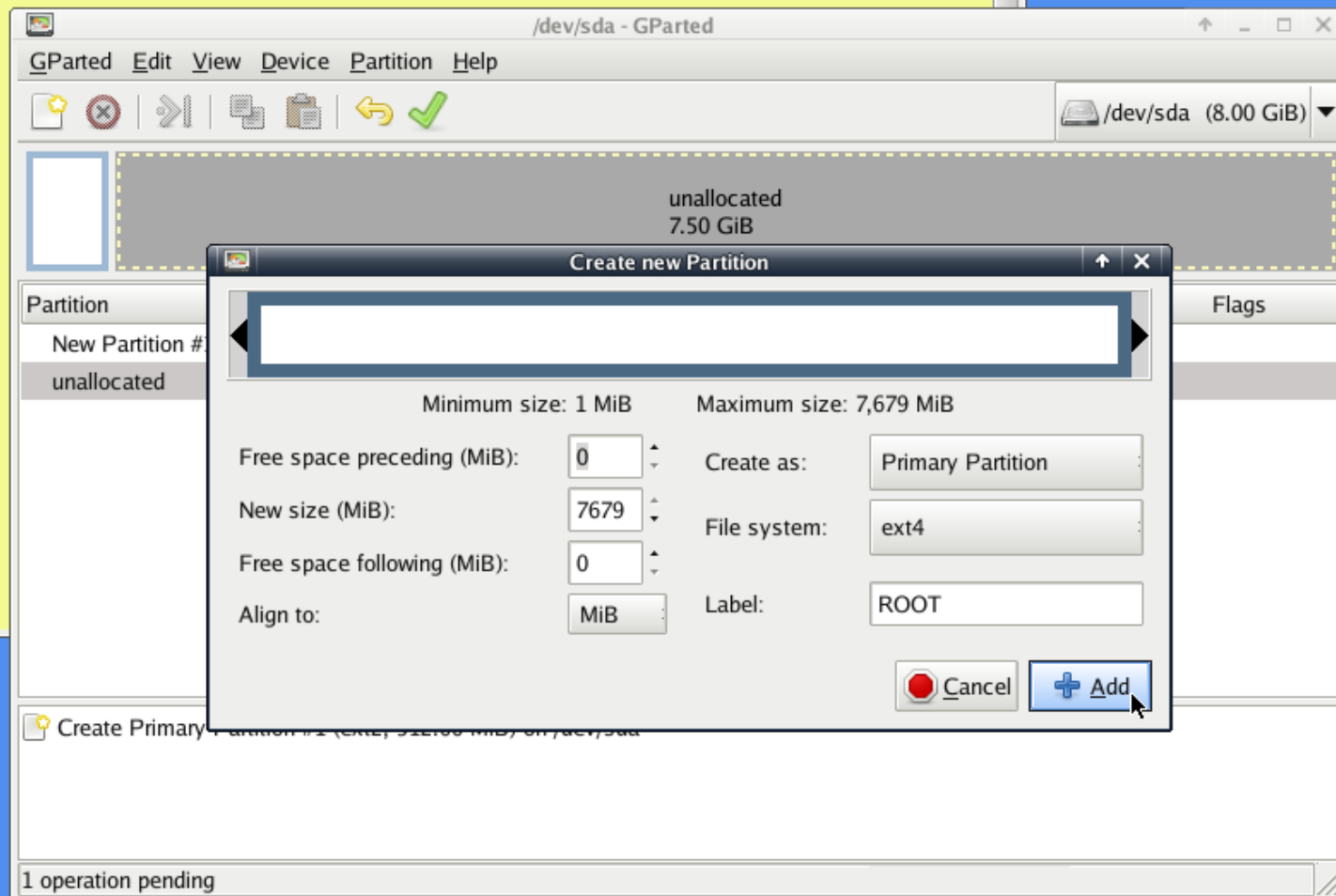
	Used	Unused	Flags
MiB	---	---	
GiB	---	---	

Create Primary Partition #1 (ext2, 512.00 MiB) on /dev/sda

1 operation pending



```
root@sysresccd /root %
```



File Virtual Machine View Send Key



Terminal

File Edit View Terminal Go Help



root@sysresccd /root %

/dev/sda - GParted

GParted **Edit** View Device Partition Help

Undo Last Operation Ctrl+Z
Clear All Operations
Apply All Operations

New Partition #2
7.50 GiB

Partition	File System	Label	Size	Used	Unused	Flags
New Partition #1	ext2	BOOT	512.00 MiB	---	---	
New Partition #2	ext4	ROOT	7.50 GiB	---	---	

Create Primary Partition #1 (ext2, 512.00 MiB) on /dev/sda
Create Primary Partition #2 (ext4, 7.50 GiB) on /dev/sda

2 operations pending

File Virtual Machine View Send Key



Terminal

File Edit View Terminal Go Help



root@sysresccd /root %

/dev/sda - GParted

GParted Edit View Device Partition Help

/dev/sda (8.00 GiB)

New Partition #2
7.50 GiB

Partition	File System	Label	Size	Used	Unused	Flags
New Partition #1	ext2	ROOT	512.00 MiB			
New Partition #2						

Are you sure you want to apply the pending operations?

Editing partitions has the potential to cause LOSS of DATA.
You are advised to backup your data before proceeding.

Create Primary Partition #1 (ext2, 512.00 MiB) on /dev/sda
Create Primary Partition #2 (ext4, 7.50 GiB) on /dev/sda

2 operations pending

Take a Screenshot

- Whole Screen

Press **PrintScreen**

- Current Window

Press **ALT+PrintScreen**

- Send Devo the Screenshots

devon@hubner.org





```
root@sysresccd /root %
```

/dev/sda - GParted

GParted Edit View Device Partition Help

/dev/sda (8.00 GiB)

New Partition #2
7.50 GiB

Partition	File System	Flags
New Partition #1	ext2	---
New Partition #2	ext4	---

Applying pending operations

Depending on the number and type of operations this might take a long time.

Completed Operations:

All operations successfully completed

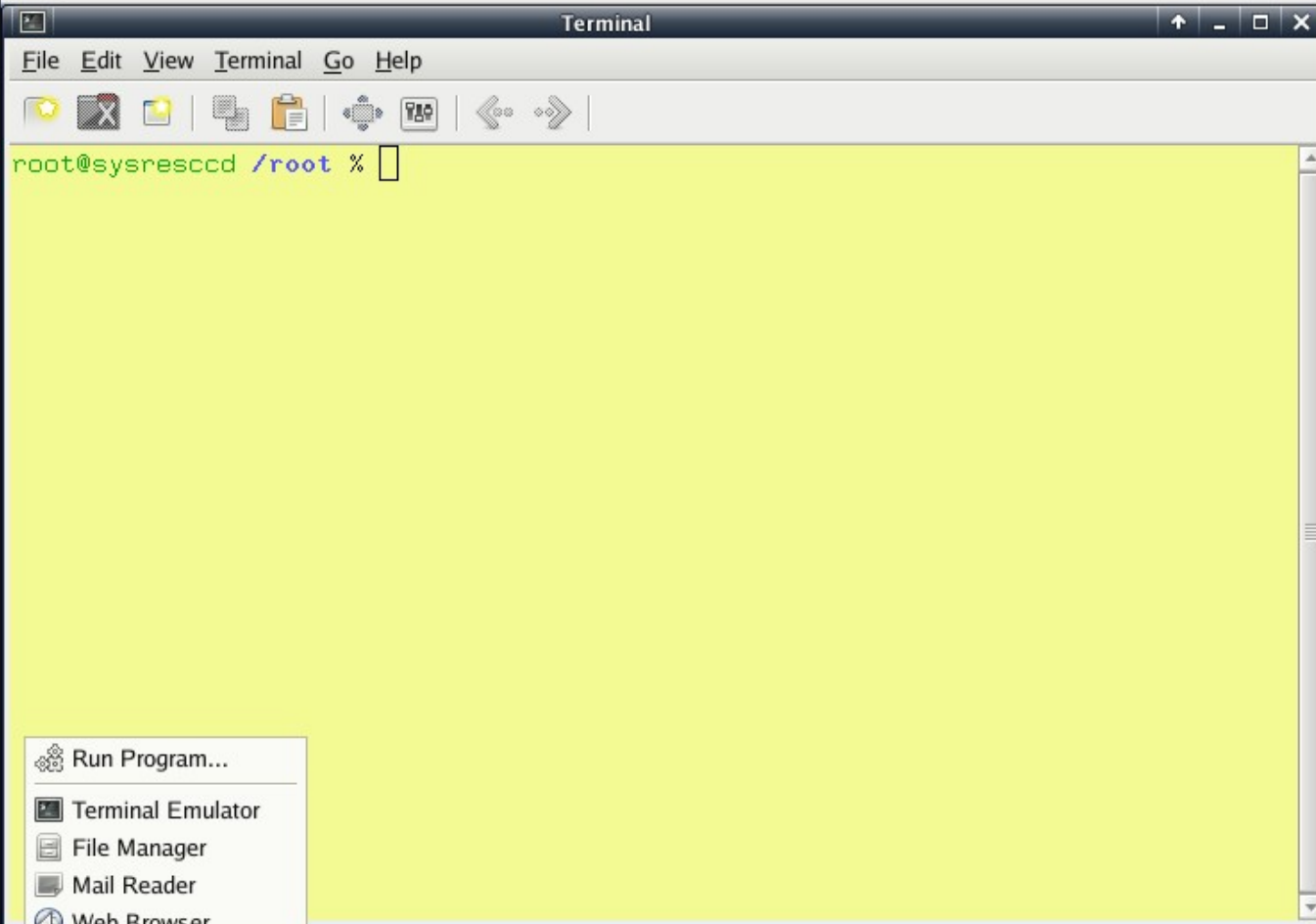
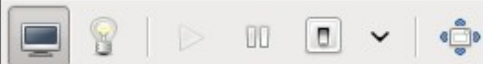
[Details](#)

[Save Details](#) [Close](#)

Create Primary Partition #1 (ext2, 512.00 MiB) on /dev/sda

Create Primary Partition #2 (ext4, 7.50 GiB) on /dev/sda

2 operations pending



- Run Program...
- Terminal Emulator
- File Manager
- Mail Reader
- Web Browser
- Settings
- Accessories
- Development
- Internet
- Multimedia
- Office
- System
- About Xfce
- Log Out



```
xauth: file /root/.Xauthority does not exist
```

```
X.Org X Server 1.10.4
Release Date: 2011-08-19
X Protocol Version 11, Revision 0
Build Operating System: Linux 2.6.32-131.17.1.f01.el6.x86_64 i686 Gentoo
Current Operating System: Linux sysresccd 3.0.13-std241-i586 #3 SMP Tue Dec 13 1
9:02:05 UTC 2011 i686
Kernel command line: scandelay=1 initrd=initram.igz BOOT_IMAGE=rescuecd
Build Date: 04 December 2011 01:44:02PM
```

```
Current version of pixman: 0.22.2
    Before reporting problems, check http://wiki.x.org
    to make sure that you have the latest version.
Markers: (--) probed, (**) from config file, (==) default setting,
    (++) from command line, (!!) notice, (II) informational,
    (WW) warning, (EE) error, (NI) not implemented, (??) unknown.
(==) Log file: "/var/log/Xorg.0.log", Time: Wed Sep 5 14:39:59 2012
(==) Using system config directory "/usr/share/X11/xorg.conf.d"
(EE) Failed to load module "fbdev" (module does not exist, 0)
xinit: connection to X server lost
```

```
waiting for X server to shut down
```

```
root@sysresccd /root : halt_
```